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THE MANITOBA MEDICAL ASSOCIATION REVIEW
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CONTENTS

Clinical Section

The Diagnosis and Surgical Aspects of Jaundice

By

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Jaundice is a symptom common to many pathological processes, and not a disease in itself. It may be a manifestation of some generalized systemic disease, or of a lesion confined to the liver or its ducts. It may occur without any impairment of liver function as in hemolytic icterus. The factors concerned in the production of jaundice are therefore many and variable. The possible icterogenic agents may be hepatotoxic drugs, infections, toxins, stones, strictures and tumours. Infections may cause jaundice either through hemolysis of blood, destruction of liver cells or by inflammatory obstruction of the bile passages. Toxins may cause liver damage and therefore impaired excretion of bile pigments. Hemolytic toxins of course cause excessive destruction of blood and accumulation of excess bile pigments in the blood and tissues. Stones, strictures and tumours cause bile duct obstruction. All of these possibilities have to be reviewed in the differential diagnosis in a given case of jaundice. An exhaustive history, complete physical examination and suitable laboratory tests are the essential steps in completing the diagnosis.

The Origin and Accumulation of Bile Pigment

In considering the origin of bile pigment one has to follow the life cycle of a red blood corpuscle. Red blood cells are formed in the bone marrow, acquiring iron and building up hemoglobin as they develop. When mature they are released into the circulation. By ingenious experiments it has been estimated that the life of a red blood cell is roughly one month. The cellular disintegration which follows occurs in the reticulo-endothelial system of the spleen, bone-marrow and to a lesser degree in the Kupffer cells of the liver. The liberated hemoglobin is broken down into component parts. One by-product is the bile pigment, bilirubin. The bilirubin is carried by the blood stream to the liver and there excreted into the bile ducts. That is, the liver functions only as an excretory organ with reference to bilirubin; however, in its passage through the liver cells bilirubin undergoes a subtle change which alters its behavior without changing its chemical constitution. This alteration is manifested in the fact that in hemolytic jaundice there is no bile in the urine, and with this type of bile pigment which has not passed through the liver cells we get an indirect Van den Bergh reaction. On the other hand the bilirubin in obstructive jaundice has passed through the liver cells, but because it cannot be excreted through the bile ducts, is reabsorbed into the blood and partly excreted by the kidneys. In this type of jaundice there is a direct Van den Bergh reaction and bile in the urine. These types of bilirubin have been referred to as type 1 and type 2.

The normal value for bilirubin in the blood serum is 0.1 to 0.5 mgms. of bilirubin per 100 cubic centimeters of blood, or in terms of the icterus index 4 to 6 units. A latent or subclinical jaundice is said to be present when the icterus index is from 6 to17; clinical jaundice is present when the icterus index is above 17 units. The accumulated bilirubin is in excess in the blood stream and in all the tissues of the body except those of the central nervous system.

Jaundice may result from three possible groups of causes. First of all the excessive hemolysis of blood. Here the normal liver is unable to cope with the excess amount of circulating bile pigment. Secondly the destruction or degeneration of liver cells may cause jaundice. The liver cells are so damaged that bile pigment is not excreted into the bile ducts. Lastly it may be due to obstruction of bile ducts. The ducts are occluded and bile pigments cannot get into the duodenum, they are therefore re-absorbed through the liver cells back into the blood stream.

These facts have formed the basis for McNee's classification of jaundice:

1. The hemolytic or haematogenous type.
2. The hepatogenous, toxic or infective type.
3. The obstructive type.

Since there are so many different causes of jaundice diagnosis must necessarily be made by a process of exclusion. The easiest type of jaundice to exclude in a given case is the hemolytic type. This first group in contrast to the other two groups presents two striking and constant features—firstly, the absence of bile in the urine, secondly, the complete absence of pruritus.

In most cases of hemolytic jaundice the cause of the jaundice is obvious, that is to say it comes on late in a severe illness, i.e., streptococcal septicemia, pneumonia, ectopic pregnancy, polycythemia when over-treated by phenylhydrazine, pernicious anaemia, icterus neonatorum or as a result of faulty blood matching for transfusions. The cause of the jaundice in these cases is obvious and presents no diagnostic problem:

There are two types of hemolytic jaundice however, which may require surgical treatment, namely familial and acquired hemolytic jaundice. The first runs a comparatively benign course, but the second often comes on acutely and is charac-

terized by repeated hemolytic crises at times ending fatally. The clinical features of both types are chronic icterus, secondary anaemia of the microcytic type, periodic exacerbations of symptoms, occasional lower abdominal pain, upper abdominal pain and enlarged spleen. The red blood cells show increased fragility and a reticulocytosis, there are also many spherical microcytes present. The Van den Bergh reaction is indirect. Splenectomy gives a high percentage of cures by removing a large portion of the reticulo-endothelial system, thereby lessening the amount of blood destruction.

From the standpoint of differential diagnosis hepatogenous jaundice presents the greatest difficulty. Here again the history of the patient is the most important factor in diagnosis. One group of cases of hepatogenous jaundice is due to hepatotoxic drugs, such as cinchophen, arsenic, phosphorus and chloroform. A second group may be caused by systemic disorders such as toxic goitre, pregnancy, syphilis and acute myocardial failure. The third variety of hepatogenous jaundice is due largely to unknown causes. In this group are included catarrhal jaundice, acute and subacute yellow atrophy of the liver, and cirrhosis of the liver.

The diagnosis of the first and second group of cases depends upon obtaining an accurate history of the medication used by the patient or of the systemic disease preceding the onset of the jaundice. The diagnosis of the third group of conditions is a most difficult problem. In these cases the history is that of an insidious onset of jaundice with general malaise, delayed pruritus, dark colored urine and a normal light yellow stool. Physical examination reveals little abnormal apart from the jaundice. There may be increased or diminished liver dulness, depending on the stage of the disease. The urine contains bile; the stools may or may not contain bile.

Clinically if a patient has an acute jaundice with little constitutional reaction, especially if it occurs in an adolescent and runs a short course, we call it catarrhal jaundice. If the same state of affairs exists, coupled with chills and fever, we call it infective cholangitis. Cases of subacute yellow atrophy follow the same clinical course except that the jaundice is protracted over a period of weeks or even months. The jaundice in these cases often goes to extreme limits, the icterus index may be as high as 200 or more. Recovery is slow. Finally if the icterus develops acutely, and death occurs early due to severe destruction of the liver parenchyma, the case is probably one of acute yellow atrophy of the liver. The limitations in our knowledge of these conditions are due to the fact that the first three types usually recover, and hence do not come to autopsy. Acute yellow atrophy frequently comes to autopsy and we therefore know exactly what happens to the liver in this condition.

Among this group of cases occur some very difficult diagnostic problems, particularly those who have subacute yellow atrophy of the liver associated with attacks of upper abdominal pain closely simulating biliary colic. It may be impossible in these cases to exclude a stone as the cause of the icterus, and laparotomy must be performed to be sure that no obstruction exists in the extra hepatic biliary tract. We have had several cases which illustrate this difficulty.

Likewise it is often difficult to rule out carcinoma of the head of the pancreas, chronic pancreatitis or silent stone in the common duct as a cause of the jaundice in these cases. I have operated upon several of these patients and found a slightly thickened gall bladder, a normal-appearing common duct and a normal pancreas. The liver showed no gross abnormality beyond the fact that it was excessively stained with bile. On opening the gall bladder it was found to contain a thick, tenacous dark bile. Drainage of the gall bladder in each of these instances was followed by gradual recovery. However, only four to six ounces of bile drained from the gall bladder in 24 hours, the drainage tube often came out and the fistula closed some little time before the subsidence of the jaundice was complete. I believe therefore that the surgical procedure carried out had little or nothing to do with the ultimate recovery of these patients. The fact that I wish to emphasize however, is that these patients were not seriously harmed by surgery. This finding is not in accord with the experience some other men have had. It is important to note that even an exhaustive study may not definitely differentiate between intrahepatic and obstructive jaundice, and that undue delay in the latter condition may do much harm.

To repeat, practically all our difficulties in connection with the diagnosis of jaundice center around the differentiation between hepatogenous jaundice from painless extra hepatic obstructive jaundice, whether it be due to silent stone in the common duct, carcinoma of the head of the pancreas, or painless silent chronic pancreatitis. Painless jaundice with bile persistently present in the stool in a patient in whom the gall bladder is not palpable, is strong presumptive evidence that the jaundice is hepatogenous in origin. Confirmation is afforded by finding that the gall bladder visualizes. There is no contra-indication to gall bladder visualization in these cases.

From the standpoint of surgical treatment we are most concerned with obstructive jaundice. The lesions producing this type of jaundice may be classified under five headings, in the order in which they are amenable to surgical treatment:

1. Stone in the bile ducts.
2. Benign stricture of the common bile duct.
3. Chronic pancreatitis.
4. Carcinoma of the ampulla of Vater.
5. Carcinoma of the head of the pancreas.
6. Carcinoma of the gall bladder and bile ducts.

A case with *stone in the common duct* will give a history of typical colic with *variable* jaundice,

chills and fever and upper abdominal pain and tenderness succeeding the attacks of colic in 80% of cases. 25% of these patients will have had previous operations on the biliary tract. The most striking single feature about these cases of stone in the common duct is that the symptoms are variable, the jaundice is rarely extreme, and the icterus index not usually over 100.

Transient jaundice may be due to a stone impacted in Harmann's pouch producing oedema and pressure on the common duct but no stone in the duct. Conversely stones in the common duct may not be associated with jaundice; one patient had 25 large stones in the common duct and gave no history of jaundice. Bile is usually demonstrable in the stool or in the duodenal contents. Intermittent appearance of bile in duodenal drainage, especially when cholesterol crystals and calcium bilirubin pigments occur, suggests the presence of stones. Lahey states that the diagnostic significance of this finding was proven at operation in thirty out of thirty-two cases in whom the common duct was explored for calculi. He goes on to say that this method of examining the sediment has been of great value in jaundice cases in whom the evidence of stone in the ducts was inconclusive. Failure to find this sediment was regarded as a contra-indication to operation, especially when the clinical findings had been inconclusive. Invariably bile is present in the urine. The amount of urobilinogen will vary with the amount of bile which reaches the intestine.

Benign stricture of the common bile duct may be suspected when the patient has had an operation on the biliary tract, has a delayed convalescence and in whom jaundice develops soon after operation. Not infrequently an external biliary fistula develops which may discharge continually or intermittently. The jaundice deepens markedly when the external fistula closes and diminishes again when the fistula opens. If the duct is occluded entirely there is naturally no bile in the stools. If the duct is partly occluded bile may occasionally be found in the stool.

Chronic Pancreatitis

Clinically there are two types of chronic pancreatitis. Recurring subacute pancreatic necrosis with pain and transient jaundice is almost invariably diagnosed biliary colic from stone. The second, characterised by painless persistent jaundice, is usually mistaken for carcinoma of the head of the pancreas. The occurrence of jaundice in association with these lesions depends on the fact that in 60% of cases the common duct passes through the head of the pancreas. Oedema of the latter would compress the lumen of the duct in that 60% of cases.

Obstructive Jaundice Due to Malignant Lesions

It is usually impossible to decide by any clinical investigation which of the *malignant lesions* may be present. Carcinoma of the head of the pancreas being the commonest of these lesions is generally the one diagnosed. It occurs usually in patients past middle age, males 2:1. The onset is gradual and the first sign to develop is a painless jaundice which deepens progressively. Pain in some measure occurs in 50% of cases. It is a dull, aching continuous pain in the right upper abdomen or in the right scapular region. Biliary colic occurs in 12% of cases. Anorexia, cachexia and general weakness develop early in the course of the illness, indeed they may actually precede the onset of the icterus.

On physical examination in addition to the icterus and obvious wasting, the only significant findings are a distended tense gall bladder, and occasionally an enlarged liver. If the common hepatic or intrahepatic ducts are the seat of the neoplasm the gall bladder will not be palpable.

It should be emphasized here that a carcinoma of the ampulla of Vater is apt to be quite vascular and therefore anaemia may be a marked feature. Gross or occult blood in the stools suggests carcinoma, but especially carcinoma of the ampulla of Vater or of the duodenal papilla.

Of some importance in differentiation between jaundice due to obstruction of the duct above the pancreas and obstruction in the pancreas, is the examination of the fat in the stools. Obstruction which affects the bile duct and the duct of Wirsung results in an increase in the fat in the stool, chiefly in the neutral fats, which in the absence of pancreatic enzymes are not split. In obstruction above the pancreatic ducts the fats are increased but since lipase is present, the increase is in the fatty acids.

Special Laboratory Tests

The tests which are of importance in the investigation of jaundice are as follows:

1. Urine.
   - (a) Bile.
   - (b) Urobilinogen.
2. Blood.
   - (a) Icterus index.
   - (b) Serum bilirubin, normal .1 to .5 mgms. per 100 cc's.
   - (c) Van der Bergh.
   - (d) Fragility of red cells.
   - (e) Spherulocytosis.
   - (f) Cholesterol and cholesterolester estimation.
   - (g) Bleeding and clotting time.
   - (h) Prothrombin time.
3. The stool.
   - (a) Bile.
   - (b) Blood.
   - (c) Fats.
4. Duodenal drainage.
   - (a) Bile.
   - (b) Cholesterol crystals.
   - (c) Bilirunbin calcium pigment.
   - (d) Blood.

5. Liver function tests.
   (a) Bromsulphthalein.
   (b) Galactose tolerance test.
   (c) Hippuric acid test of Quick.
6. Renal function test.
   (a) Blood urea.
   (b) Urea clearance.

Pre-Operative Preparation of Jaundiced Patients

There are two main causes of post-operative death in jaundiced patients, viz., hepato-renal failure, and hemorrhage. The care of the jaundiced patient must at all times be directed toward conservation of liver function. The pre-operative administration of glucose both orally, if tolerated, and intravenously, is the sheet anchor in the prevention of liver failure. A low protein high carbohydrate diet should be given for a week or more pre-operatively.

The most important recent advance in the management of jaundiced patients is the discovery by Dam and his Danish co-workers of a means of preventing hemorrhage. These investigators, studying a hemorrhagic disease in chicks found it due to deficiency of a substance they called vitamin K. Quick demonstrated that jaundiced patients who bled showed a deficiency of prothrombin in the blood and that this deficiency was overcome by the oral administration of vitamin K and bile salts. Vitamin K is not absorbed from the gastro-intestinal tract in the absence of bile salts. The daily oral administration of 200 mgs. of vitamin K as well as 1000 mgs. of bile salts, will usually in 24 to 72 hours restore the prothrombin time to normal. If bleeding is actually in progress the blood clots must be washed out of the stomach and 400 to 600 mgs. of vitamin K given with 4000 mgs. of bile salts, this dose continued until the bleeding ceases. An immediate transfusion is also of value. The use of vitamin K both pre and post-operatively is controlled by frequent estimations of the prothrombin time, which is an indirect quantitative estimation of the blood prothrombin. Normal figures are from 18 to 20 seconds. If the time is prolonged above 40 seconds there is a distinct danger of hemorrhage. In most jaundiced patients the danger of hemorrhage persists for 8 to 10 days post-operatively. Vitamin K should therefore be administered for this period post-operatively, and records of the prothrombin time taken every 24 to 48 hours. To give a blood transfusion pre-operatively or during operation is of value to diminish the risk of post-operative hemorrhage. It supplies a quantity of fresh prothrombin, and assists in controlling shock.

The anaesthetic of choice in jaundiced patients is the one which will be least likely to damage an already impaired liver. Ether and chloroform are hepatotoxic drugs and contra indicated. We have therefore employed high spinal nupercaine and find it eminently satisfactory both from the patient's and surgeon's viewpoint. Two hours pre-operatively 2 to 4 grains of phenobarbital are given and one hour later morphine 1/6 to 1/4 grains with scopolomine 1/150.

Surgical Treatment of Jaundice

The surgical procedure chosen must be one with a minimum amount of trauma consistent with the drainage of bile and the relief of jaundice. Blood loss is scrupulously controlled and operating time is shortened as much as possible. A two-stage procedure is generally preferable unless the patient is young and in good general condition, and the jaundice of short duration. There are two main types of obstructive jaundice, benign lesions, namely stone in the common duct, benign stricture of the duct, chronic pancreatitis, and malignant lesions, including carcinoma of the head of the pancreas, bile ducts or gall bladder.

Any incision that will give free access to the gall bladder may be used. However, when a previous incision exists it is usually wise to go through this again. Where stone in the common duct is suspected, a paramedian incision or right rectus incision is usually preferable from the standpoint of access to the ducts. However, a subcostal (Kocher) incision also permits good exposure of the gall bladder and biliary tree, the small bowel does not protrude into the operative field, the incision closes without difficulty or undue tension and it reduces to a minimum the incidence of a burst abdomen or a post-operative hernia. Finally it allows more lateral and therefore more dependent drainage from Morrison's pouch.

For the malignant conditions giving rise to prolonged obstructive jaundice, a two-stage procedure is usually employed. At the first sitting, since the gall bladder is palpable, a minimal incision is made over the distended organ, under local anaesthesia. At the second sitting a right rectus incision is the incision of choice.

Where the gall bladder has previously been removed, exposure of the bile duct is facilitated by a sharp dissection along the under surface of the liver which is carried upward to the hilum. When the hilum is reached the stomach and duodenum and the adhesions anterior to them are retracted over to the left, thus exposing the common duct just below the hilum of the liver. When the gall bladder is present it and the cystic duct serve as a guide to the common bile and common hepatic ducts. There may however, be numerous adhesions, inflammatory masses or tumours at the junction of the cystic and common bile ducts, and common hepatic duct, which may make exposure and recognition of these structures extremely difficult. Adequate exposure and certain demonstration of the ducts is an essential preliminary to any attempt at dealing with obstructive lesions.

The removal of stones from the common duct is often difficult technically. Preliminary aspiration with a needle and syringe should be a routine

procedure before the duct is opened. Guy stitches of plain catgut on either side of the level at which the opening is to be made facilitate subsequent maneuvers. Stones behind the duodenum or at the ampulla should always be manipulated up to the supraduodenal portion if at all possible. If this cannot be done the transduodenal route must be employed. Instrumental dilation of the ampulla of Vater probably does more harm than good. During the past year Dr. Ian Maclean has been making careful dissections of the bile ducts, and from a study of these specimens one must conclude that surgical dilatation could only result in laceration of the tissues with oedema and infection, followed by scarring. If there is much biliary mud or broken stones in the duct, it should be washed out with normal saline.

External drainage after choledochotomy is always indicated. For short drainage a catheter will suffice; for prolonged drainage the use of a T-tube is advisable. This brings up to a matter which is at times difficult to decide, namely the length of time one should leave a tube in the common duct. Roughly this is determined by the duration of jaundice and the amount of cholangitis. The time varies from two weeks to four months. In practise, the tube is not removed until we are able to demonstrate by cholangiography that there is no hindrance to the free flow of bile into the duodenum.

Early in 1933 my associate Dr. Hay and I began the routine injection of lipiodol into the biliary tree in these cases. In association with Dr. J. C. McMillan we worked out the following technique —20 cc's of warm lipiodol are injected slowly, say in 45 seconds. The first plate is taken at once and the second ten to twenty minutes later. This procedure determined the patency of the duct by demonstrating the free passage of oil into the small bowel. If no negative shadows are demonstrable we can rule out stones. Stricture, negative shadows, undue dilatation of the biliary tree may suggest the necessity for more prolonged drainage or further exploration of the duct. Before further operative interference for removal of calculi that have been left in the common duct, Walters suggests washing out the duct with a mixture of ether and alcohol to dissolve the stones. Some authors advise injecting lipiodol and taking plates of the biliary tree during the actual course of the operation. This may have a definite value but it often cannot be carried out because of lack of essential equipment.

In the treatment of benign stricture of the common bile duct two main difficulties are encountered. Exposure is difficult due to previous inflammation and post-operative adhesions. The scar tissue is often extremely dense and diffuse, so that the method of dissecting along the liver to the hilum is particularly helpful in this type of case. The other difficulty in benign stricture is that of anastomosis. An essential preliminary is adequate mobilization of the duct and the duodenum. A narrow stricture may be incised and a T-tube introduced. A long stricture or complete occlusion of the duct necessitates a dissection of the duct up to the liver hilum and anastomosis between the common duct and duodenum either by a mucosal cuff or by a plastic of the whole duodenal wall.

Obstructive jaundice caused by painless chronic pancreatitis is often indistinguishable clinically from that due to carcinoma of the head of the pancreas. The clinical course therefore, and the operative treatment are similar with that described under the heading of carcinoma of the head of the pancreas.

The commonest malignant lesion to produce obstructive jaundice is carcinoma of the head of the pancreas. The great majority of attempts at complete removal of such a lesion have been unsuccessful. However, in Sir John Fraser's series 7% of patients in whom the diagnosis of carcinoma of the head of the pancreas was made were proven ultimately to have chronic pancreatitis. He therefore concludes that every patient with carcinoma of the head of the pancreas, unless moribund, should be given the benefit of surgical treatment.

After careful pre-operative treatment as previously outlined, an operation is undertaken to relieve the jaundice. The simplest possible procedure should be used. It is unwise to spend time exploring the abdomen. As the gall bladder is usually dilated; a purse-string suture is introduced and a drainage tube inserted. Because of risk of hemorrhage, the pre-operative treatment is continued for at least twelve to fourteen days. The greatest risk in these cases is from hepato renal failure, i.e., 58% (Fraser). The liberal administration of glucose is therefore important.

When the patient's general condition has improved sufficiently, a second stage operation is undertaken. At this time thorough exploration of the common duct and pancreas may be carried out. A silent stone if present in the duct is removed, otherwise an attempt is made to determine the exact cause and site of the obstruction. If inoperable carcinoma is found or a diffuse pancreatitis, some form of internal biliary drainage is resorted to. The gall bladder is anastomosed to the stomach or duodenum.

A carcinoma of the ampulla of Vater, if diagnosed early, may be removed by the transduodenal route. The duodenum is opened over the ampulla and a wide circle of duodenal mucosa and wall excised around the ampulla and including the tumour. Very free bleeding ensues, and is usually controllable by the insertion of sutures which approximate the cut end of the common bile duct with the edges of the opening in the duodenum. One such opportunity has presented itself, but unfortunately the patient died of hemorrhage after cholecystostomy. This was before the discovery of vitamin K.

Carcinoma of the gall bladder, by the time it has produced jaundice, is completely inoperable.

The diagnosis can not be made pre-operatively, and on exploration usually no surgical interference is possible. However, I have removed two malignant gall bladders. The first patient age 39, with symptoms of gall stones extending over a period of seventeen years was suffering from repeated attacks of severe gall bladder colic. At operation multiple small metastases were found in the liver. The gall bladder which was the site of the primary carcinoma and contained many small calculi was easily removed. The patient was completely relieved of his severe recurrent colic (every two or three weeks) and died nine months later from his malignancy. The second patient had stones and malignancy of the gall bladder but no demonstrable secondaries. The gall bladder and a portion of the adjacent lesion was removed. She remained symptom free for six months then developed painless jaundice and died within a year. In a group of eleven cases of primary carcinoma of the gall bladder that have come under our observation, only one was without gall stones. In the majority of the others symptoms of gall stones had been present for years.

Summary

Jaundice is a symptom, not a disease entity. It may result from three possible groups of causes:

(1) Hemolysis.

(2) Hepatitis.

(3) Bile duct obstruction.

Hemolytic jaundice is due to toxins and drugs; from a surgical standpoint the familial type is the most important.

Hepatogenous jaundice is due to toxins and toxic drugs which act on the liver. It is difficult to diagnose, but when diagnosed should be treated medically. The great difficulty in diagnosis is to exclude jaundice due to a silent stone or a malignant tumour.

From the surgical standpoint obstructive jaundice constitutes the most important group of cases. Intermittent appearance of bile in duodenal contents and the finding of cholesterol crystals and calcium bilirubin suggest the presence of a common duct stone.

Benign stricture follows some operation on the biliary tract, and is usually associated with a biliary fistula.

Obstruction due to malignant lesions is painless in 50% of cases. The gall bladder is usually dilated. If the lesion is at the ampulla of Vater, blood in the stools may be a prominent finding.

In the pre-operative preparation glucose and vitamin K with bile salts are of great importance. The former by enhancing the glycogen reserve reduces the risk of liver failure; the latter by restoring prothrombin to normal reduces the risk of hemorrhage.

High spinal anaesthesia is a useful type of anaesthetic in these cases. Exposure of the common duct is facilitated by sharp dissection along the under surface of the liver to the hilus.

In cases with common duct stones and infection T-tube drainage is indicated until cholangiography shows an unobstructed passage into the duodenum.

In cases diagnosed carcinoma of the head of the pancreas, a two-stage operation for drainage purposes is indicated, especially since in 7% of cases (Fraser) the diagnosis is subsequently shown to be pancreatitis.

Carcinoma of the ampulla of Vater may be resected in early cases.

Carcinoma of the gall bladder is usually inoperable when diagnosed. Almost invariably it is associated with gall stones.

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NOTICE

The Motor Vehicle Branch of the Provincial Government have requested that all doctors wishing the same motor license for 1940 as previously issued should make application not later than the end of January. From February 1st on, the lowest unissued numbers in the 4000 series will be issued to any application made.

Special Articles and Association Notes

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J. GORDON WHITLEY

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Editorial or other opinion expressed in this Review is not necessarily sanctioned by the Manitoba Medical Association

Membership

With the beginning of the new year statements for the annual dues will be sent out to all members.

As the Manitoba Medical Association at the last annual meeting decided to become federated with the Canadian Medical Association, the annual dues for the two associations will now be collected together. The total annual fee for the two associations has been reduced from $20.00 to $18.00; but for anyone wishing to join either association alone, the fee for the annual dues is still $10.00.

It is hoped that as many as possible of the members will send in their annual dues without delay, as all extra statements that are sent out only involves the association in additional expense. The executive committee have attempted to make the payments of the annual dues as simple as possible and would ask for your co-operation.

Radio Broadcasting

The Canadian Medical Association have arranged a series of thirty-two broadcasts of fifteen minutes' duration for each Wednesday at 6.45 p.m., Central Standard Time.

The Canadian Medical Association would like to receive comments from members of the profession with regard to these broadcasts.

Manitoba Hospital Service Association

The Manitoba Hospital Service Association has been in operation for nearly a year, and you have received at intervals a record of the progress which has been made. I think you will agree with the officers of the Association, that the support of the public has been very gratifying, and the hope is expressed that you have received benefit both directly and indirectly.

There are a few problems which your co-operation would help to eliminate. Do not express opinions to patients as to what the regulations are unless you are familiar with them; few doctors are. Advise the patient to communicate with the Association's office.

Not infrequently subscribers are recommended to go to the hospital for x-ray examinations, etc.; these to be done in the Out-Patient Department and not as a bed patient. This is contrary to a regulation, and that regulation was made for the benefit of you, a private practitioner. If patients were given the privilege of the Out-Patient Department either for injuries or examinations, then the hospitals would be selling medical services, and organized medicine would complain.

If you have criticisms of the service on the question of red tape or benefits provided, would you be good enough to make them to the Association and not to the patient, or the potential subscriber. A thoughtless criticism has occasionally been responsible for much embarrassment to the officers. Where there are defects to be remedied, it does not help much that the reports should reach the office long after the incidents have taken place, and by word of mouth.

Finally, may I remind you that this is a co-operative organization in which many of you are interested. You will have to treat the occasional patient, luckily uncommon, who wants to get full value for his annual dues, and therefore requests you to send him to hospital for very trivial ailments, or being in hospital insists on all the extra services provided by the contract. It is only necessary here to draw your attention to this and to point out that you are the only one who can control it.

The Association will be grateful for any criticism constructive or otherwise, and hopes for a continuation of the co-operation which you have so willingly given.

E. S. MOORHEAD,
Secretary, Manitoba Hospital Service Association.

Important Notice re Federal Income Tax Automobile Mileage Allowance

Under date of February 28th, 1939, the Department of National Revenue and the Canadian Medical Association jointly issued a memorandum re Income tax for medical practitioners, from which the following is extracted:

"(h) Depreciation on motor cars on cost:

Twenty per cent, 1st year;
Twenty per cent, 2nd year;
Twenty per cent, 3rd year;
Twenty per cent, 4th year;
Twenty per cent, 5th year.

The allowance is restricted to the cars used in professional practice and does not apply to cars for personal use.

"(i) Automobile Expense (one car):

This account will include cost of license, oil, gasoline, grease, insurance, washing, garage charges and repairs.

(Alternative to (h) and (i) — In lieu of all the foregoing expenses, including depreciation, there may be allowed a charge of 10 cents a mile for mileage covered in the performance of professional duties).

If a chauffeur is employed so that in result he is substantially used for business purposes (although incidentally used for personal or family use) the expense will be allowed."

In 1936, this 10 cent rate, as set forth above, was reduced to 8 cents.

The Department of National Revenue now advises that, taking effect on January 1st, 1940, the mileage rate allowed will be reduced to 6 cents. Income tax returns made in 1940, relating to the year 1939, may be shown at the rate of 8 cents.

Report of the Radio Committee

The President and Members
of the Manitoba Medical Association.

Your Committee wishes to report as follows for 1938-39:

During the past year your Committee co-operated with the Cancer Relief and Research Institute in arranging broadcasts during their regular campaign; otherwise all broadcasting on medical health subjects has been done by the Department of Health of the Provincial Government.

The Canadian Medical Association have been given time for national broadcasting on health subjects by the Canadian Broadcasting Corporation, and these will likely start in the near future and will be sponsored by the different provincial associations.

Broadcasting by irregular practitioners on health matters comes under the jurisdiction of the Department of Pensions and National Health at Ottawa. Your Committee drew the attention of the Canadian Medical Association to certain objectionable broadcasting from these sources, and was assured that this was being investigated by the proper authorities.

R. W. RICHARDSON,
Convener,
Radio Committee.

Report of Editorial Board

The President and Members
of the Manitoba Medical Association.

As Chairman of the Editorial Board of the Canadian Medical Association *Journal,* I beg to report that the relationship of the Manitoba Medical Association to the *Journal* of the Canadian Medical Association has remained specifically as heretofore.

Monthly news notes from Manitoba have been supplied to the *Journal* and also occasional items of interest concerning the University of Manitoba. The number and quality of contributions to the *Journal* from Manitoba physicians have maintained their former high standing.

The research work of Doctor J. R. Davidson on Tar Carcinoma in Mice and the application of this research work to Cancer in the human being is worthy of special note.

ROSS MITCHELL,
Chairman, Editorial Board,
Canadian Medical Association Journal.

OBITUARY

DR. DAN. MacDOUGALL

Dr. Dan. MacDougall died suddenly in the Winnipeg General Hospital on December 22nd, at the age of 45. Born in Russell, Ontario, he came to Winnipeg 26 years ago and graduated from the Manitoba Medical College in 1917. On graduating he joined the C.A.M.C. and proceeded to England, returning to Winnipeg in 1919. He is survived by his widow and five children.

Notice

Applications invited for the post of Assistant Surgeon on the Honorary Attending Staff of St. Boniface Hospital. Appointments to be temporary. Applications already on file will be reconsidered.

Applications may be sent to Sister Superior, before January 15th, 1940.

Post-Graduate Course

The Faculty of Medicine of the University of Manitoba will offer a course in Therapeutics with special reference to recent advances in Treatment Methods, the course to be held on February 21st, 22nd and 23rd, 1940. In addition to the program outlined below the department of Public Health on the evening of February 22nd invites all those taking the course to be its guest at dinner. Following the dinner there will be an informal discussion of the Public Health and Hospital Aid Act.

On the evening of February 23rd the entire group of post-graduate students are invited by the Winnipeg Medical Society to attend its monthly meeting in the Medical College at 8.15 p.m. The guest speaker of this occasion will be Dr. McKelvie, Professor of Gynecology and Obstetrics in the University of Minnesota.

For further information regarding the course and also for the purpose of enrollment those interested should communicate with Dr. L. G. Bell, secretary of the Post-Graduate Committee, % the Dean's Office, Medical College, Winnipeg.

Program of Course in Recent Advances in Therapeutics

February 21st

8.30 a.m. Registration.

9.00 Medical Ward Rounds.

(1) The treatment of congestive heart failure.

(2) The use of sulphanilamide in septicaemia.
The use of sulphapyradine in pneumonia.

(3) The treatment of anaemias.

(4) The treatment of acute haemorrhage from peptic ulcer.

(5) The use of protamine zinc insulin in the treatment of diabetes.

11.00 Practical demonstration of spinal anaesthesia and the use of the newer anaesthetics ..... Dr. D. C. Aikenhead

2.00 p.m. The treatment of insomnia ..... Dr. A. T. Mathers.

2.30 The treatment of leukorrhoea ..... Dr. Brian Best.

3.00 The routine investigation of sterility ..... Dr. W. F. Abbott

3.30 Sulphanilamide in the treatment of genito-urinary infections.
(1) Venereal disease ..... Dr. Backman.
(2) Specific infections ..... Dr. H. Morse.

February 22nd

9.00 a.m. Surgical Ward Rounds.

(1) Gastrointestinal intubation for the relief of post-operative distension and small bowel obstruction.

(2) The use of post-operative fluids.

(3) Blood transfusions.

(4) The prevention and treatment of
a. Venous thrombosis.
b. Post-operative pulmonary complications.

(5) The use of drugs in the treatment of post-operative intestinal paresis and urinary retention.

February 22nd (Cont.)

(6) The pre-operative preparation of the serious surgical risk.

(7) Injection treatments.

Communicable Diseases

2.00 p.m. Diagnosis and treatment.
a. Diphtheria ..... Dr. Dougald McIntyre.
b. Scarlet Fever ..... Dr. Ellen Taylor.
c. Typhoid Fever ..... Dr. Ton Quong.

Prevention and control.
a. Some general consideration of immunology ..... Dr. Fred. Cadham.
b. Diphtheria ..... Dr. C. R. Donovan.
c. Scarlet Fever ..... Dr. D. S. Boulton.
d. Typhoid Fever ..... Dr. W. J. Wood.
e. Whooping Cough ..... Dr. Harry Medovy.

February 23rd

9.00 a.m. The treatment of abortion ..... Dr. J. D. McQueen. Dr. Elinor Black.

9.30 The treatment of toxaemias of pregnancy ..... Dr. Ross Mitchell.

10.00 The treatment of occiput posterior ..... Dr. F. G. McGuinness.

10.30 The present status of vitamin therapy ..... Dr. Frank White. Dr. Harry Medovy.

11.00 The treatment of epilepsy ..... Dr. W. M. Musgrove.

11.30 The treatment of urinary frequency in the female ..... Dr. C. R. Rice.

2.00 p.m. The use of mercurial diuretics ..... Dr. Ormerod.

2.30 The treatment of menopausal neurosis ..... Dr. Gilbert Adamson.

3.00 The use of vaccines and serums ..... Dr. Fred. Cadham.

3.30 The treatment of common skin diseases ..... Dr. A. M. Davidson.

Registration Fee - - - - $10.00

Department of Health and Public Welfare

EXECUTIVE OFFICES

WINNIPEG

December 22nd, 1939.

To the Medical Profession,
Province of Manitoba.

Dear Doctor:

During this Yuletide Season I should like to take the opportunity of expressing the appreciation and thanks of every member of this Department for your co-operation in and understanding of our many problems during the present year.

I would especially mention your continued splendid assistance during the second year of "The Pregnancy Survey" sponsored by the Rockefeller Foundation, the Federal Department Pensions and National Health, Organized Medicine, and this Department. It is only through your generous co-operation and goodwill that we are receiving such satisfactory returns, which, although not one-hundred percent, are really very gratifying; and, the Department are hopeful that before the completion of the Survey next May we will have one-hundred percent of returns from all physicians doing obstetrical work.

Assuring you that this Department stands ready at all times to assist you in any way within the field of Health Preservation or Disease Control and Prevention; and extending to you the very best wishes of all members of the Staff for a Merry Christmas and a Happy New Year, believe me.

Yours very sincerely,

J. B. Griffiths

Minister of Health
and Public Welfare.

Department of Health and Public Welfare

NEWS ITEMS

COMMUNICABLE DISEASES REPORTED

Urban and Rural — November 5 - December 2, 1939

Chickenpox: Total 232—Winnipeg 84, Kildonan East 29, Unorganized 28, Brandon 13, Kildonan West 9, Flin Flon 6, Lansdowne 6, MacDonald 5, Oakland 5, Ste. Rose Village 5, St. Andrews 4, Transcona 3, Miniota 2, Siglunes 2, Springfield 2, Westbourne 2, Brenda 1, Gilbert Plains Village 1, Lorne 1, Louise 1, Pipestone 1, Rossburn Rural 1, St. James 1, Selkirk 1, Shoal Lake Rural 1, Silver Creek 1, Stonewall 1, Strathclair 1, Whitehead 1, Whitewater 1 (Late Reported: Unorganized 9, Kildonan East 2, Flin Flon 1, Saskatchewan 1).

Whooping Cough: Total 159—Winnipeg 95, Kildonan East 12, Brandon 7, St. Clements 6, Grandview Town 5, Transcona 5, Unorganized 5, St. Boniface 4, Kildonan West 3, Miniota 2, Pilot Mound 2, Strathclair 2, Boissevain 1, Franklin 1 (Late Reported: Unorganized 5, St. Clements 2, Brandon 1, Flin Flon 1).

Measles: Total 94—The Pas 57, Winnipeg 11, Unorganized 7, South Norfolk 4, Louise 2, Flin Flon 1, Fort Garry 1, Hanover 1, Lorne 1, Rosedale 1, Stonewall 1, Victoria 1 (Late Reported: Swan River Rural 6).

Scarlet Fever: Total 85—Winnipeg 39, St. Boniface 7, St. James 7, Unorganized 4, Brokenhead 3, Lorne 3, Shell River 3, Killarney 2, Bifrost 1, Brandon 1, Dauphin Rural 1, Dauphin Town 1, Old Kildonan 1, Pipestone 1, St. Vital 1, Swan River Rural 1, Turtle Mountain 1, Virden 1 (Late Reported: Lorne 6, Kildonan East 1).

Tuberculosis: Total 61—Unorganized 18, Winnipeg 10, The Pas 5, Transcona 3, Flin Flon 2, Rossburn Village 2, St. James 2, Selkirk 2, Cypress North 1, Dauphin Rural 1, Ellice 1, Glenella 1, Hillsburg 1, Old Kildonan 1, West Kildonan 1, Lorne 1, Manitou Village 1, North Norfolk 1, Portage City 1, Portage Rural 1, Rosedale 1, Ste. Anne 1, St. Boniface 1, Swan River Town 1, Woodlands 1.

Diphtheria: Total 40—Winnipeg 27, Dauphin Rural 2, Hanover 2, St. James 2, Coldwell 1, Ste. Anne 1, St. Clements 1, St. Vital 1, Selkirk 1 (Late Reported: Hanover 1, Selkirk 1).

Mumps: Total 27—Winnipeg 16, Rockwood 3, Strathclair 2, Kildonan East 1, Portage Rural 1, St. Boniface 1, Stonewall 1, The Pas 1, Westbourne 1.

Lobar Pneumonia: Total 11—Brandon 2, Portage City 1, Souris 1, Unorganized 1 (Late Reported: Clanwilliam 1, Pipestone 1, Portage Rural 1, Ritchot 1, St. Boniface 1, Unorganized 1).

Diphtheria Carriers: Total 9—Winnipeg 7, Strathcona 1, Unorganized 1.

Trachoma: Total 8—Hanover 5, Stanley 2, Unorganized 1.

Typhoid Fever: Total 8—St. Clements 4, Ste. Anne 2, Grey 1, Hanover 1.

Erysipelas: Total 7—Winnipeg 3, Montcalm 1, Rockwood 1, Springfield 1, Stonewall 1.

Influenza: Total 7—Rapid City 2, Saskatchewan 1, Winnipeg 1 (Late Reported: North Cypress 1, Saskatchewan 1, Unorganized 1).

Septic Sore Throat: Total 3—Hanover 2, Unorganized 1.

Undulant Fever: Total 1—Winnipeg 1.

Puerperal Fever: Total 1—Lansdowne 1.

German Measles: Total 1—St. Boniface 1.

Encephalitis: Total 1—Brandon 1.

Venereal Disease: Total 125—Gonorrhoea 86, Syphilis 39.

DEATHS FROM ALL CAUSES IN MANITOBA

For the Month of October, 1939

URBAN—Cancer 50, Tuberculosis 6, Syphilis 5, Pneumonia Lobar 4, Diphtheria 2, Influenza 2, Pneumonia (other forms) 2, Poliomyelitis 1, Whooping Cough 1, Para Typhoid 1, Tetanus 1, other deaths under one year 15, all other deaths 175, Stillbirths 11. Total 276.

RURAL—Cancer 30, Tuberculosis 13, Influenza 6, Whooping Cough 6, Pneumonia (other forms) 4, Pneumonia Lobar 2, Poliomyelitis 1, Puerperal Septicaemia 1, other deaths under one year 39, all other deaths 135, Stillbirths 20. Total 257.

INDIAN—Pneumonia (other forms) 7, Tuberculosis 5, Whooping Cough 1, other deaths under one year 3, all other causes 1, Stillbirths 2. Total 19.

THE PSYCHOLOGICAL ASPECTS OF COD LIVER OIL ADMINISTRATION

Some authorities recommend that cod liver oil be given in the morning and at bedtime when the stomach is empty, while others prefer to give it after meals in order not to retard gastric secretion. If the mother will place the very young baby on her lap and hold the child's mouth open by gently pressing the cheeks together between her thumb and fingers while she administers the oil, all of it will be taken. The infant soon becomes accustomed to taking the oil without having its mouth held open. It is most important that the mother administer the oil in a matter-of-fact manner, without apology or expression of sympathy.

If given cold, cod liver oil has little taste, for the cold tends to paralyze momentarily the gustatory nerves. As any "taste" is largely a metallic one from the silver or silverplated spoon (particularly if the plating is worn), a glass spoon has an advantage.

On account of its higher potency in Vitamins A and D, Mead's Cod Liver Oil Fortified With Percomorph Liver Oil may be given in one-third the ordinary cod liver oil dosage, and is particularly desirable in cases of fat intolerance. —Adv.